

401 KAR 61:005. General provisions.

RELATES TO: KRS 224.10-100, EO 2008-507, 2008-531, 40 C.F.R. Part 60

STATUTORY AUTHORITY: KRS 224.10-100

NECESSITY, FUNCTION, AND CONFORMITY: KRS 224.10-100(5) authorizes the cabinet to promulgate administrative regulations for the prevention, abatement, and control of air pollution. EO 2008-507 and 2008-531, effective June 16, 2008, abolish the Environmental and Public Protection and establish the new Energy and Environment Cabinet. This administrative regulation provides for the establishment of monitoring requirements, performance testing requirements, and other general provisions as related to existing sources.

Section 1. Applicability. This administrative regulation shall apply to sources subject to an administrative regulation in 401 KAR Chapter 61.

Section 2. Performance Test. (1) Sources shall conduct performance tests pursuant to 401 KAR 50:045 and shall provide the results to the cabinet in a written report.

(2) Unless required by the cabinet, in writing, pursuant to 401 KAR 50:045, the following emissions units shall be exempt from subsection (1) of this section:

- (a) Process operations with a process weight rate of less than 100 tons per hour;
- (b) Indirect heat exchangers with less than 250 million BTU heat input;
- (c) Incinerators with a charging rate of forty-five (45) metric tons per day (fifty (50) tons per day) or less; and
- (d) Emissions units subject to 401 KAR 61:040, 61:045, 61:050, 61:056, 61:060, 61:085, 61:090, 61:095, 61:100, 61:105, 61:110, 61:120, 61:122, 61:124, 61:125, 61:130, 61:132, 61:135, 61:137, 61:150, 61:155, and 61:160.

Section 3. Emission Monitoring. (1) Sources in a category listed in subsection (2) of this section shall:

(a) Install, calibrate, operate, and maintain monitoring equipment necessary for continuously monitoring and recording the pollutants specified in this section for the applicable source category; and

(b) Complete the installation and performance testing of monitoring equipment required in paragraph (a) of this subsection and begin monitoring and recording within eighteen (18) months of promulgation of an applicable performance specification in 40 C.F.R. Part 60, Appendix B.

(2) Source categories and respective monitoring requirements shall be as follows:

(a) Indirect heat exchangers, as specified in subsection (5)(a) of this section, shall be monitored for opacity or particulate matter emissions, sulfur dioxide emissions, and oxygen or carbon dioxide;

(b) Sulfuric acid plants, as specified in subsection (5)(b) of this section, shall be monitored for sulfur dioxide emissions;

(c) Nitric acid plants, as specified in subsection (5)(c) of this section, shall be monitored for nitrogen oxides emissions;

(d) Petroleum refinery units shall be monitored as specified in subsection (5)(d) of this section;

(e) Incinerators, as specified in subsection (5)(e) of this section, shall be monitored for opacity; and

(f) Control devices, as specified in subsection (5)(f) of this section, shall be monitored for opacity.

(3) Sources retired by June 29, 1984, shall be exempt from the requirements of this section if operation ceased on or before that date.

(4) During periods of monitoring system malfunction, a temporary exemption from the monitoring and reporting requirements of this section may be provided pursuant to 401 KAR 50:055 if the source demonstrates that the malfunction was unavoidable and is being repaired as expeditiously as practicable.

(5) Monitoring requirements.

(a) Except as provided in this paragraph, for indirect heat exchangers with an annual average capacity factor of greater than thirty (30) percent that are subject to an emissions standard in 401 KAR 61:015, the following monitoring requirements shall apply, as applicable:

1. For indirect heat exchangers of greater than 250 million BTU per hour heat input:

a. A continuous monitoring system for opacity or particulate matter meeting the appropriate performance specification in subsection (6) of this section, except that an indirect heat exchanger shall not be required to have a continuous monitoring system if:

i. Gaseous fuel, oil, or a mixture of gas and oil are the only fuels burned and the indirect heat exchanger is in compliance with the applicable opacity or particulate matter standards without the use of particulate matter collection equipment; and

ii. The source has never been found, through an administrative or judicial proceeding, to be in violation of a visible emission standard; and

b. CEMS for sulfur dioxide meeting the appropriate performance specifications in subsection (6) of this section, except that indirect heat exchangers burning only natural gas, wood waste, or biomass shall be exempt from this requirement; and

2. If measurements of oxygen or carbon dioxide in the flue gas are necessary to convert sulfur dioxide or nitrogen oxides continuous emission monitoring data to the units of the emission standard, CEMS for percent oxygen or carbon dioxide meeting the appropriate performance specifications in subsection (6) of this section.

(b) For sulfuric acid plants producing sulfuric acid with a contact process that burns elemental sulfur, alkylation acid, hydrogen sulfide, or acid sludge, the following monitoring requirement shall apply:

1. CEMS for sulfur dioxide meeting the appropriate performance specifications in subsection (6) of this section for each sulfuric acid producing unit at the source that:

a. Has greater than 200 tons per day production capacity as expressed in 100 percent acid; and

b. Produces sulfuric acid by the contact process that burns elemental sulfur, alkylation acid, hydrogen sulfide, or acid sludge; and

2. Units that do not use the conversion to sulfuric acid as a primary means to prevent the emissions of sulfur dioxide and other sulfur compounds into the atmosphere shall not be required to have CEMS.

(c) For nitric acid plants, the following monitoring requirement shall apply: CEMS for nitrogen oxides meeting the appropriate performance specifications in subsection (6) of this section for nitric acid producing units that:

1. Produce nitric acid thirty (30) to seventy (70) percent by weight in strength by either the pressure or atmospheric pressure process; and

2. Have greater than 200 tons per day production capacity expressed as 100 percent acid.

(d) For petroleum refineries the following monitoring requirements shall apply:

1. For catalyst regenerators used in conjunction with fluid bed cracking units of greater than 20,000 barrels per day fresh feed capacity, a continuous monitoring system for opacity or PM CEMS meeting the appropriate performance specifications in subsection (6) of this section;

2.a. For sulfur dioxide in the gases discharged into the atmosphere from the combustion of fuel gases subject to 401 KAR 61:145, CEMS meeting the appropriate performance specifications in subsection (6) of this section, in which:

(i) The pollutant gas used to prepare calibration gas mixtures under 40 C.F.R. Part 60, Performance Specification 2, Section 2.1 and for calibration checks shall be sulfur dioxide;

(ii) The span shall be set at 100 ppm; and

(iii) Reference Method 6 shall be used for conducting monitoring system performance evaluations; or

b. If compliance is achieved by removing hydrogen sulfide from the fuel gas before it is burned, for fuel gases burned in fuel gas combustion devices subject to 401 KAR 61:145, an instrument that meets the appropriate performance specifications in 40 C.F.R. Part 60, Appendix B for continuously monitoring and recording concentrations of hydrogen sulfide in the fuel gases burned, in which;

i. Fuel gas combustion devices having a common source of fuel gas may be monitored at one (1) location, if monitoring at this location accurately represents the concentration of hydrogen sulfide in the fuel gas burned; and

ii. The span of the continuous monitoring system shall be 300 ppm;

3. For claus sulfur recovery plants subject to 401 KAR 61:145:

a. If compliance is achieved with an oxidation control system or a reduction control system followed by incineration, CEMS for sulfur dioxide meeting the appropriate performance specifications in subsection (6) of this section with the span set at 500 ppm;

b. If compliance is achieved with a reduction control system not followed by incineration, CEMS meeting the appropriate performance specifications in subsection (6) of this section with the spans set at twenty (20) ppm for the measurement of hydrogen sulfide emissions and 600 ppm for reduced sulfur compounds emissions; and

4. For fluid catalytic cracking unit catalyst regenerators subject to 401 KAR 61:145, CEMS for sulfur dioxide meeting the appropriate performance specification in subsection (6) of this section, with the span set at 1,500 ppm.

(e) For incinerators with a charging capacity of more than forty-five (45) metric tons per day (fifty (50) tons/day) continuous monitoring system for opacity or PM CEMS for particulates meeting the appropriate performance specifications in subsection (6) of this section.

(f) For control devices with a concentrated discharge associated with an emissions unit subject to 401 KAR 61:070, 61:075, or 61:080, a continuous monitoring system for opacity meeting the appropriate performance specifications in subsection (6)(a) of this section.

(6) Except as provided in subsection (7) of this section, sources subject to this section shall demonstrate compliance with the following performance specifications in 40 C.F.R. Part 60, Appendix B:

(a)1. Continuous monitoring systems for opacity shall comply with Performance Specification 1; and

2. PM CEMS for particulate matter shall comply with Performance Specification 11;

(b) CEMS for sulfur dioxide shall comply with Performance Specification 2;

(c) CEMS for nitrogen oxides shall comply with Performance Specification 2;

(d) CEMS for oxygen shall comply with Performance Specification 3; and

(e) CEMS for carbon dioxide shall comply with Performance Specification 3.

(7) Sources entering into a binding contractual obligation prior to September 11, 1974, to purchase specific continuous monitoring system components and sources installing a system prior to October 6, 1975, shall comply with the following requirements:

(a) Continuous monitoring systems for opacity shall:

1. Measure opacity levels within plus or minus twenty (20) percent with a confidence level of ninety-five (95) percent; and

2. Use the Calibration Error Test and associated calculation procedures in 40 C.F.R. Part 60, Appendix B, Performance Specification 1;

(b) CEMS for nitrogen oxides and sulfur dioxide shall:

1. Measure emission levels within plus or minus twenty (20) percent with a confidence level of ninety-five (95) percent; and

2. Use the Calibration Error Test, the Field Test for Accuracy (Relative), and associated operating and calculation procedures in 40 C.F.R. Part 60, Appendix B;

(c) If required by the cabinet, in writing, pursuant to 401 KAR 50:045, CEMS installed on an emissions unit prior to October 6, 1975, shall conduct tests under paragraphs (a) and (b) of this subsection as appropriate; and

(d) All continuous monitoring systems specified in this subsection shall be:

1. Maintained and replaced with new or upgraded equipment as necessary; and

2. Demonstrated to comply with applicable performance specifications on or before June 29, 1984.

(8) For CEMS calibration gas mixtures:

(a) For systems monitoring sulfur dioxide installed on indirect heat exchangers, sulfuric acid plants or petroleum refinery fluid catalyst cracking unit regenerators, the pollutant gas used to prepare the mixture shall be sulfur dioxide pursuant to 40 C.F.R. Part 60, Appendix B, Performance Specification 2; Section 2.1; and

(b) For systems monitoring nitrogen oxides installed on nitric acid plants, the pollutant gas used to prepare the mixture shall be nitrogen dioxide pursuant to 40 C.F.R. Part 60, Appendix B, Performance Specification 2, Section 2.1.

(9) The cycling time, or the total time necessary for a monitoring system to complete a cycle of operation to sample, analyze, and record an emission measurement, shall be as follows:

(a) Continuous monitoring systems for opacity shall complete a minimum of one (1) cycle of operation for each successive ten (10) second period; and

(b) CEMS for measuring oxides of nitrogen, carbon dioxide, oxygen, or sulfur dioxide shall complete a minimum of one (1) cycle of operation for each successive fifteen (15) minute period.

(10) CEMS devices shall be installed in a location that obtains representative measurements of emissions or process parameters from the emissions unit pursuant to applicable performance specifications in 40 C.F.R. Part 60, Appendix B.

(11) For combined effluents from two (2) or more emissions units:

(a) If the units are of similar design and operating characteristics, CEMS may be installed on an effluent stream combined before being released to the atmosphere; or

(b) If the combined emissions units are not of similar design and operating characteristics, or if the effluent from one (1) of the emissions units is released to the atmosphere through more than one (1) point, the source may submit to the cabinet for approval an alternate procedure demonstrating the appropriateness of installing CEMS on the combined effluent.

(12) Sources required to install continuous monitoring systems shall:

(a) Record the zero and span drift of the monitoring system pursuant to the method prescribed by the manufacturer of the system and shall subject the continuous monitoring system to the manufacturer's recommended zero and span check at least once daily or follow the manufacturer's recommendations if adjustments at shorter intervals are recommended;

(b) Adjust the zero and span if the twenty-four (24) hour zero drift or twenty-four (24) hour calibration drift limits exceed an applicable performance specification in Appendix B of 40 C.F.R. Part 60, Appendix B;

(c) For continuous monitoring systems subject to subsection (7) of this section, adjust the system if the twenty-four (24) hour zero drift or twenty-four (24) hour calibration drift exceeds ten (10) percent of the applicable emission standard;

(d) If available, use span and zero gases certified by the manufacturer to be traceable to National Institute of Standards and Technology reference gases;

(e) Use nitrogen dioxide for daily checks as applicable; and
(f) Reanalyze by triplicate analyses span and zero gases every six (6) months from the date of manufacture using the appropriate reference methods in 40 C.F.R. Part 60, Appendix A as follows:

1. Reference Method 6 for sulfur dioxide;
2. Reference Method 7 for nitrogen dioxide; and
3. Reference Method 3 for carbon dioxide and oxygen.

(13) Instrument span shall be kept at approximately 200 percent of the expected instrument data display output corresponding to the emission standards to which the source is subject.

(14) Sources may be allowed to use equivalent procedures and requirements approved by the U.S. EPA for continuous monitoring systems as follows:

(a) Alternate monitoring requirements to accommodate CEMS that require corrections for stack moisture conditions;

(b) Alternate locations for installing continuous monitoring systems or monitoring devices if the source demonstrates to the cabinet that installation at alternate locations will enable accurate and representative measurements;

(c) Alternative procedures for performing calibration checks;

(d) Alternative monitoring requirements if the effluent from two (2) or more identical emissions units is released to the atmosphere through more than one (1) point if the procedures generate accurate emission averages; and

(e) Alternate continuous monitoring systems that do not meet the spectral response requirements in 40 C.F.R. Part 60, Appendix B, Specification 1, but that adequately demonstrate, for each applicable emissions unit, a definite and consistent relationship between their measurements and the opacity measurements of Performance Specification 1.

(15) For each continuous monitoring system, the source shall submit, in writing to the cabinet, for every calendar quarter, a written report of excess emissions including the nature and cause of the excess emissions, if known, as follows:

(a) The averaging period used for data reporting shall correspond to the averaging period specified in the emission test method used to determine compliance with an emission standard for the applicable pollutant and source category, and quarterly reports shall be postmarked by the 30th day following the end of each calendar quarter;

(b) For opacity measurements, the summary shall consist of the magnitude in actual percent opacity of six (6) minute averages of opacity greater than the opacity standard in the applicable standard for each hour of operation of the facility, as follows:

1. Average values may be obtained by integration over the averaging period or by arithmetically averaging a minimum of four (4) equally spaced, instantaneous opacity measurements per minute;

2. All exempted time periods shall be considered before determining the excess average of opacity (for example, if an administrative regulation allows two (2) minutes of opacity measurements in excess of the standard, the source shall report all opacity averages, in any one (1) hour, in excess of the standard, minus the two (2) minute exemption); and

3. If more than one (1) opacity standard applies, excess emissions data shall be submitted in relation to all applicable standards;

(c) For particulate matter measurements, the summary shall be based on twenty-four (24) hour block averaging times;

(d) For gaseous measurements, the summary shall consist of hourly averages expressed in the units of the applicable standard;

(e) Except for zero and span checks, the date and time of each period during which the CEMS was not operating, including proof of CEMS performance during system repairs and the nature of

the repairs or adjustments;

(f) If excess emissions have not occurred and the CEMS have not been inoperative, repaired, or adjusted, this information shall be included in the report; and

(g) The source shall maintain a file for a minimum of two (2) years from the date of collection of the data or submission to the cabinet of:

1. All information reported in the quarterly summaries; and
2. All other data collected by the CEMS or as necessary to convert monitoring data to the units of the applicable standard.

(16) Sources shall use the following procedures for converting monitoring data to units of the standard if necessary:

(a) For indirect heat exchangers, the following procedures shall be used to convert gaseous emission monitoring data in parts per million to g/million cal (lb/million BTU):

1. If the source elects to measure oxygen in the flue gases for an indirect heat exchanger pursuant to subsection (5)(a)2 of this section, the measurements of the pollutant concentration and oxygen concentration shall be on a dry basis and the following equation shall be used for the conversion procedure: $E = CF(20.9) / (20.9 - \%O_2)$;

2. If the source elects to measure carbon dioxide in the flue gases pursuant to subsection (5)(a)2 of this section, the measurement of the pollutant concentration and the carbon dioxide concentration shall be on a consistent wet or dry basis and the following equation shall be used for the conversion procedure: $E = CFc(100) / \%CO_2$; and

3. For subparagraphs 1 and 2 of this paragraph:

a. E = pollutant emission, g/million cal (lb/million BTU);

b. C = pollutant concentration, g/dscm (lb/dscf), determined by multiplying the average concentration (ppm) for each hourly period by 4.16×10^{-5} M g/dscm per ppm (2.64×10^{-9} M lb/dscf per ppm) where M = pollutant molecular weight, g/g-mole (lb/lb-mole). M = 64 for sulfur dioxide and 46 for oxides of nitrogen;

c. $\%O_2$, $\%CO_2$ = oxygen or carbon dioxide volume (expressed as percent) determined with equipment specified in subsection (6) of this section; and

d. F, Fc = a factor representing a ratio of the volume of dry flue gases generated to the calorific value of the fuel combusted (F), and a factor representing a ratio of the volume of the carbon dioxide generated to the calorific value of the fuel combusted (Fc) respectively. Values of F and Fc are given in 401 KAR 59:015 as applicable.

(b) For sulfuric acid plants the owner or operator shall:

1. Establish a conversion factor three (3) times daily pursuant to 40 C.F.R. 60.84;

2. Multiply the conversion factor by the average sulfur dioxide concentration in the flue gases to obtain average sulfur dioxide emissions in kg/metric ton (lb/short ton); and

3. Report the average sulfur dioxide emission for each averaging period in excess of the applicable emission standard in the quarterly report required in subsection (15) of this section.

(c) The source may use data reporting or reduction procedures that vary from the provisions of this section if the source demonstrates that the alternate procedures are at least as accurate and protective as the requirements of this section and the alternative procedures may include:

1. Alternative procedures for computing emission averages that do not require integration of data; and

2. Alternative methods of converting pollutant concentration measurements to the units of the emission standards.

(17) Sources may apply for approval of an alternative or equivalent method specified in 40 C.F.R. Part 60 or a test method specified in the Kentucky State Implementation Plan, if the alternative provisions are included in the source's permit and the source demonstrates:

(a) The inability of CEMS to provide accurate determinations of emissions at the emissions unit;

- (b) The infrequent operation of the emissions unit;
- (c) The requirements of this section impose an extreme economic burden on the source; or
- (d) The CEMS is unable to be installed due to physical limitations at the source. (5 Ky.R. 465; 6 Ky.R. 27; eff. 6-29-1979; 7 Ky.R. 330; eff. 1-7-1981; 8 Ky.R. 1427; eff. 12-1-1982; TAm eff. 8-9-2007; 35 Ky.R. 1261; 1795; eff. 4-3-2009; Crt eff. 1-25-2019.)